

EPA AirHub Ambient Data Format Standard Documentation

Office of State Air Partnerships (OSAP)

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EPA AirHub Ambient Data Format Standard Documentation

Version Number	Date	Overview of Changes
Draft	June 2026	Initial Version
v0.1	August 1, 2026	Addressed comments from EPA AirHub workgroups

A full change log for each version is located at the end of this document. For questions or comments related to this data format or supporting information, please contact UP@epa.gov.

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List of Terms

AirNow	AirNow System
API	Application Programming Interface
AQCSV	Air Quality Common Space Value
AQDx	Air Quality Data Exchange Standard Format
AQS	Air Quality System
CRS	Coordinate Reference System
CSV	Comma-Separated Values
DAS	Data Acquisition System
FEM	Federal Equivalent Method
FRM	Federal Reference Method
JSON	JavaScript Object Notation
MVP	Minimum Viable Product
PQAO	Primary Quality Assurance Organization
QA	Quality Assurance
QC	Quality Control
TZD	Time Zone Designation
SLT	State, Local, and Tribal
UTC	Coordinated Universal Time
WGS84	World Geodetic System 1984

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Introduction and Purpose

EPA AirHub Overview

The Ambient workspace within the EPA AirHub accepts air quality/meteorological observations and quality assurance data from participating organizations such as State, Local, and Tribal (SLT) air quality agencies and other Federal partners. The Ambient workspace will replace the functions of the Air Quality System (AQS) and the AirNow system. The Ambient workspace will be utilized for both near real-time reporting and the official EPA repository of air quality data.

The EPA AirHub data formats were developed to provide a standard for delivering data to the Ambient workspace in EPA AirHub. This data format standard was developed from a combination of data format standards including the [AQCSV format](#) used in the legacy AirNow system, the raw data transaction formats from the legacy [AQS system](#), and the [AQDx file format](#) developed by Colorado Department of Public Health and Environment. Data Acquisition System (DAS) companies and laboratory organizations were consulted on the development of this data format standard.

Purpose of this document

This document describes the data formats, file formats, and field specifications for submitting data to the Ambient workspace in EPA AirHub. It covers the details for ambient air quality, meteorological, and quality assurance data.

There are two categories of files that can be submitted in either CSV or JSON formats. Types of data are:

- Measurement Data - Ambient air quality and meteorological data
- QA Data - Quality assurance data for all assessment types

Network metadata (Site, Equipment, Parameters, etc.) can be updated via EPA AirHub user interface or the Application Programming Interface (API) in the future.

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File Submission Process (future)

Data files can be transferred to EPA AirHub in one of two ways - either manually via the user interface or via the EPA AirHub API. More details about the process of submitting files will be provided at a future date.

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Overview of Major Changes from AQS & AirNow

During the development of EPA AirHub, several significant updates have been made to network structures, data delivery format, codes, and more. These changes have been made for a variety of reasons, including new EPA objectives and goals, outdated information and technology, reporting needs that are not covered in AQS/AirNow, etc. This section outlines some of these changes at a high level. Not all items described here are covered in detail in this document; the intent is to provide some additional context for some of the terminology and ideas outlined in the different data format definitions. In-depth descriptions of these changes and terms will be provided in future documentation for EPA AirHub. Work is ongoing with data acquisition system vendors to provide proper integrations for these new features and concepts. These changes are future forward only - historical data from AQS/AirNow will be preserved and unaffected by deprecations/structure changes.

- **One measurement format to support both AirNow and AQS measurement data** submissions in EPA AirHub, retiring the AQCSV (AirNow) and Raw Data Transaction (AQS) format. The new format will support CSV and JSON.
- **Consolidation of the large number of individual QA Transaction formats** into a handful of QA formats - the formats are flexible enough to be used for different QA assessments and are categorized by the type of assessment.
- **Introduction of Data States**, which is meant to help differentiate between AirNow and AQS data coexisting in a single system. Defined data states in EPA AirHub are Preliminary, Posted, and Certified. Measurement data would proceed through data states via SLT QA and the data certification process.
- **Introduction of Equipment registration and tracking**. Using a combination of existing method codes and a new make and model reference table, EPA AirHub adds the ability to register and track unique equipment via ambient measurement data and QA data records. Equipment tracking will be required for certified datasets but is optional for preliminary/real-time data submissions and non-certified datasets.
- **Updates to network structure**
 - Deprecation of the Parameter Occurrence Code (POC) concept for monitors.
 - Network structure will be as follows: Site->Equipment Feed->Parameter (in contrast to today's structure Site->Parameter->POC).
 - Sites are unchanged in concept and structure
 - Equipment Feeds are a new concept that are essentially reporting lanes for a particular make and model. The unique equipment reporting to

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parameters associated with an Equipment Feed can be swapped as long as the make and model remain unchanged.

- Parameters are unchanged in concept and structure

- **Updates to codes**

- Many updates have been made to different code sets, such as Qualifier Codes, Collection Frequency Codes, Duration Codes, etc. These changes include deprecation of unused or unneeded codes, consolidation of overlapping codes, new coding formats, and more.

Ambient Measurement Data Format

Measurement Data File and Format Conventions

File names for ambient Measurement Data do not have required specifications, although it is encouraged to use unique file names for each submission for ease of managing and tracking file submission history. The most common way to accomplish this is by adding a timestamp in the file name. File extensions should match the file format type (.csv for CSV files, or .json for JSON files). Details about the fields are provided in Table A.

Example filename: AmbientDataSubmission_20260101_1400.csv

Table A. Data field definitions for the ambient measurement data files.

Field Name & JSON Identifier	Required	Format	Description	Additional Details and Examples
Site ID siteID	Yes	String of letters, numbers, and dashes	Unique Site ID configured for a state + county, Tribal, international, or mobile site.	A Site ID must already exist in the list of Site IDs in the EPA AirHub before any data is sent related to that site. Dashes between individual parts of the site ID can be included or excluded, depending on preference. Example: 370010001 or 37-001-0001
Equipment Feed ID equipmentFeedID	Yes	String of letters, numbers, and dashes	F+3 Character Make Code+4 Character Model Code+ 2-digit Feed ID. Dashes between individual parts of	The Equipment Feed ID is a generalized data feed at a site where any instrument of a particular make/model may report to the feed. The Equipment Feed ID is unique at a site and must be created in EPA AirHub prior to submitting data to the Feed.

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Field Name & JSON Identifier	Required	Format	Description	Additional Details and Examples
D			the feed ID can be included or excluded, depending on preference.	The Make Code and Model Code are derived from the Make and Model reference table in EPA AirHub. This reference table is maintained by the EPA to ensure consistency across all networks. Examples: FMT1EBAM01 OR F-MT1-EBAM-01
Unique Equipment ID uniqueEquipmentID	No	String of letters, numbers, and dashes	U+3 Character Make Code+4 Character Model Code+ 5-digit Equipment ID. Dashes between individual parts of the equipment ID can be included or excluded, depending on preference.	Unique Equipment IDs are tied to the specific piece of equipment performing the measurement. Equipment can be registered in EPA AirHub to obtain a Unique Equipment ID. Unique Equipment IDs are unique across the entire EPA AirHub. The Make Code and Model Code are derived from the Make and Model reference table in EPA AirHub. This reference table is maintained by the EPA to ensure consistency across all networks. Examples: UMT1EBAM00001 OR U-MT1-EBAM-00001
Datetime dateTime	Yes	String (27) YYYY-MM-DDThh:mm:ss TZD	A data record's date, time, and time zone designation, following the ISO 8601 standard.	The two-digit hour (hh) should be in 24-hr time only. The Time Zone Designator (TZD) is either in Coordinated Universal Time (UTC) or the offset from UTC (+hh:mm/-hh:mm) in Local Standard Time (LST). The datetime corresponds to the beginning of a sampling or averaging period. Daylight savings should not be considered for the LST format option. UTC time format example: 2026-08-01T05:00:00 LST example (Eastern): 2026-08-01T00:00:00-05:00 Both examples represent the same time period.
Latitude latitude	No	Decimal (9,6) - a real number with 9 total digits, 2-3 on the left (including the negative sign) and 6 to the right.	Latitude of the site where the monitor is located.	World Geodetic System (WGS) 84 coordinate reference system (CRS) is required for latitude and longitude. Always report in decimals. Do not include degree symbols or cardinal directions (N, S, W, E). Report to at least 5 decimal places. If more than 6 decimal places are provided, the 6th decimal will be rounded. Example: 38.89511
Longitude longitude	No	Decimal (10,6) - a real number with 10 total digits, 3-4 on the left (including the negative sign) and 6 to the right.	Longitude of the site where the monitor is located.	World Geodetic System (WGS) 84 coordinate reference system (CRS) is required for latitude and longitude. Always report in decimals. Do not include degree symbols or cardinal directions (N, S, W, E). Report to at least 5 decimal places. If more than 6 decimal places are provided, the 6th decimal will be rounded. Example: -77.03637

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Field Name & JSON Identifier	Required	Format	Description	Additional Details and Examples
Parameter Code parameterCode	Yes	Integer (5)	Code that indicates the parameter that is being measured.	The parameter code must exist in the U.S. EPA's Parameter Code List .
Method Code methodCode	Yes	String (3)	Code that indicates the analytical and/or collection method used to perform a measurement.	The method code must exist in the U.S. EPA's Method Code List .
Value value	Yes	Decimal	The data value of the specified parameter being measured or analyzed.	If reporting missing data, report a NULL or blank value. For real-time data, add a corresponding null type of qualifier code when able. Negative values for certain parameters are accepted according to EPA guidance.
Unit Code unitCode	Yes	Integer (3)	Code indicating the units of the measurement for the specified parameter.	The 3-digit unit code indicates the units of the measurement for the specified parameter. The unit code must exist in the U.S. EPA's Unit Code List . Allowable unit codes are defined by parameter and can be found in the U.S. EPA's Parameter Protocol Table.
Duration Code durationCode	Yes	String (3) of letters / numbers	Code that indicates the period over which the observation was made.	The 3-character duration code indicates the period over which the observation was made. Available duration codes for ambient data submissions are in the U.S. EPA's Duration Code List .
Collection Frequency Code collectionFrequencyCode	No	String (3) of letters / numbers	Code that indicates the elapsed time period between observations.	Available Collection Frequency Codes for ambient data submissions are in the U.S. EPA's Code List . For continuous monitoring, this field should remain blank or use a "C" for continuous monitoring. This field is only used for parameter creation and for validating against existing parameter reporting period settings - reporting a new collection frequency code in the file does not update the collection frequency previously set in the parameter reporting period.
Channel channel	Applicable to equipment with multiple channels only - Optional	Integer (2)	Number assigned to a channel of the equipment where a parameter was measured, if applicable.	If the piece of Equipment/Equipment Feed has multiple associated channels, the channel number can be provided for the purpose of linking measurement data to QA assessment data. If channel number is not provided for multi-channel samplers, measurement data will remain in the Preliminary Data State. Channels for samplers are generally defined by the Mass Flow Controller (MFC). When not applicable, this field should be left blank.
Preliminary Validity Code validityCode	No	Integer (1)	Code indicating the validity of the measured value.	Applicable to preliminary data only , the QC code indicates the validity of the reported value. Options include: 0-Valid, 5-Suspect (considered Valid), 8-Missing (considered Invalid), and 9-Invalid. A blank/NULL Preliminary Validity Code will be assumed as 0-Valid.

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Field Name & JSON Identifier	Required	Format	Description	Additional Details and Examples
Qualifier Codes qualifierCodes	No	String (254)	Code that provides further explanation as to why a data value was flagged during quality control.	The qualifier code must exist in the U.S. EPA's Code List . If multiple qualifier codes are reported, separate them with a space. Null qualifier codes are utilized when the data value is blank/null - multiple NULL qualifiers are acceptable if they both apply.
Alternate Method Detection Limit (MDL) altMDL	No	Decimal	User supplied alternate to the federal method detection limit (MDL).	
Uncertainty	No	Decimal	The value of method uncertainty associated with the sample.	
Private Flag private	No	Bit	Flag that indicates whether the data record is private, i.e., data should not be disseminated through EPA's real-time public products.	If left blank, data will be flagged as public (0). The Private Flag only applies to Preliminary Data and restricts the data to only be viewable within the EPA AirHub platform. Once data transitions to the Posted state, all data will become Public. Public data will be distributed as appropriate to public EPA products.

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Example Ambient Measurement Files

In this example **CSV file**, PM_{2.5} is being reported at two different sites - one reporting hourly concentrations and another reporting 24-hr sample concentrations.

```
37-119-0041,F-MT1-1020-01,U-MT1-1020-00153,2025-01-15T16:00:00-05:00,35.2411,-80.7831,88101,170,15.8,105,1h,1,,,,,
37-119-0041,F-MT1-1020-01,U-MT1-1020-00153,2025-01-15T17:00:00-05:00,35.2411,-80.7831,88101,170,13.1,105,1h,1,,,,,
37-119-0041,F-MT1-1020-01,U-MT1-1020-00153,2025-01-15T18:00:00-05:00,35.2411,-80.7831,88101,170,5.5,105,1h,1,,,,,
37-119-0041,F-MT1-1020-01,U-MT1-1020-00153,2025-01-15T19:00:00-05:00,35.2411,-80.7831,88101,170,6.1,105,1h,1,,,,,
37-119-0041,F-MT1-1020-01,U-MT1-1020-00153,2025-01-15T20:00:00-05:00,35.2411,-80.7831,88101,170,9.9,105,1h,1,,,,,
37-119-0041,F-MT1-1020-01,U-MT1-1020-00153,2025-01-15T21:00:00-05:00,35.2411,-80.7831,88101,170,10.0,105,1h,1,,,,,
37-119-0041,F-MT1-1020-01,U-MT1-1020-00153,2025-01-15T22:00:00-05:00,35.2411,-80.7831,88101,170,17.6,105,1h,1,,,,,
37-067-0022,F-R&P-2025-01,U-RNP-2025-00031,2025-01-01T00:00:00-05:00,36.110927,-80.224435,88101,145,8.7,105,24h,3,1,,,,,
37-067-0022,F-R&P-2025-01,U-RNP-2025-00031,2025-01-04T00:00:00-05:00,36.110927,-80.224435,88101,145,,105,24h,3,1,,QLE QQL,,
37-067-0022,F-R&P-2025-01,U-RNP-2025-00031,2025-01-07T00:00:00-05:00,36.110927,-80.224435,88101,145,,105,24h,3,1,,NMM QLE QQL,,
```

In the **JSON example**, PM_{2.5} is being reported at two different sites - one reporting an hourly concentration and another reporting a 24-hr sample concentration. Optional fields that are not populated can be excluded from each object.

```
[
  {
    "siteID": "37-129-0002",
    "equipmentFeedID": "F-MT1-1020-01",
    "uniqueEquipmentID": "U-MT1-1020-00232",
    "dateTime": "2025-01-11T05:00:00-05:00",
    "latitude": 34.364167,
    "longitude": -77.838611,
    "parameterCode": 88101,
    "methodCode": "170",
    "value": 5.4,
    "unitCode": 105,
    "durationCode": "1H"
  },
  {
    "siteID": "370670022",
    "equipmentFeedID": "F-RNP-2025-01",
    "uniqueEquipmentID": "U-RNP-2025-00031",
    "dateTime": "2025-01-07T00:00:00-05:00",
    "latitude": 36.110927,
    "longitude": -80.224435,
    "parameterCode": 88101,
    "methodCode": "145",
    "value": "",
    "unitCode": 105,
    "durationCode": "24H",
    "collectionFrequencyCode": "3D",
    "channel": 1,
    "qualifierCodes": "NMM QLE QQL",
  }
]
```

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Examples of Legacy and EPA AirHub Ambient Measurement Data Formats

Real examples of AQS and AirNow data were used for these comparisons

AQS to EPA AirHub Example

Legacy AQS Raw Transaction Format

```
RD||06|037|2005|88101|1|7|105|145|20250107|00:00|64.12||3||IT|||||||
RD||06|065|8001|85128|2|7|108|501|20250101|00:00|13.238||6|||||||.118|
RD||06|037|6012|44201|1|1|008|087|20250101|00:00|EC|||||||
RD||06|071|0026|42602|1|1|008|099|20250102|23:00|38.4365|||||||
```

EPA AirHub Ambient Measurement Data - CSV

```
06-037-2005,F-R&P-2025-01,U-R&P-2025-00093,2025-01-07T00:00:00-08:00,,,88101,145,64.12,105,24H,3D,,,IUF,,,
06-065-8001,F-TEN-6000-01,U-TEN-6000-00133,2025-01-01T00:00:00-08:00,,,85128,501,13.238,105,24H,6D,,,,0.118,,
06-037-6012,F-TEL-0400-01,,2025-01-01T00:00:00-08:00,,,44201,087,NULL,008,1H,,,NEC,,,
06-071-0026,F-TEL-0200-01,,2025-01-02T23:00:00-08:00,,,42602,099,38.4365,008,1H,,,,,
```

EPA AirHub Ambient Measurement Data - JSON

```
[
{
  "siteID": "06-037-2005",
  "equipmentFeedID": "F-R&P-2025-01",
  "uniqueEquipmentID": "U-R&P-2025-00093",
  "dateTime": "2025-01-07T00:00:00-08:00",
  "parameterCode": "88101",
  "methodCode": "145",
  "value": "64.12",
  "unitCode": "105",
  "durationCode": "24H",
  "collectionFrequencyCode": "3D",
  "qualifierCodes": "IUF"
},
{
  "siteID": "06-065-8001",
  "equipmentFeedID": "F-TEN-6000-01",
  "uniqueEquipmentID": "U-TEN-6000-00133",
  "dateTime": "2025-01-01T00:00:00-08:00",
  "parameterCode": "85128",
  "methodCode": "501",
  "value": "13.238",
  "unitCode": "105",
  "durationCode": "24H",
  "collectionFrequencyCode": "6D",
  "altMDL": "0.118"
},
{
  "siteID": "06-037-6012",
  "equipmentFeedID": "F-TEL-0400-01",
  "dateTime": "2025-01-01T00:00:00-08:00",
  "parameterCode": "44201",
  "methodCode": "087",
  "value": "",
  "unitCode": "087",
  "durationCode": "1H",
  "qualifierCodes": "NEC"
},
{
  "siteID": "06-071-0026",
  "equipmentFeedID": "F-TEL-0200-01",
  "dateTime": "2025-01-02T23:00:00-08:00",
  "parameterCode": "42602",

```

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```

"methodCode": "099",
"value": "38.4365",
"unitCode": "008",
"durationCode": "1H"
}
}

```

AirNow to EPA AirHub Example

Legacy AirNow AQCSV Format

```

840245105253,0,0,20260728T0800-0500,88101,60,,,-999,105,7,3,39.33746,-76.58905,NAD27,,170,,,AI
840240031004,0,0,20260728T0800-0500,44201,60,,28,008,0,1,39.21771,-76.636097,NAD27,18,087,,,
840240476432,0,0,20260728T0800-0500,81102,60,,12.1,001,0,1,38.013875,-75.545666,NAD27,1,639,,,
840240330030,0,0,20260728T0800-0500,84314,60,,0.9,001,0,1,39.055277,-76.878333,NAD27,175,894,,,

```

EPA AirHub Ambient Measurement Data - CSV

```

24-510-5253,F-MT1-1020-01,U-MT1-1020-00359,2026-07-28T08:00:00-05:00,,,88101,170,NULL,105,1H,,,9,NID,,,
24-003-1004,F-TEL-0400-01,U-TEL-0400-00208,2026-07-28T08:00:00-05:00,,,44201,087,28,008,1H,,,0,,,
24-047-6432,F-TEL-T64X-01,U-TEL-T64X-00137,2026-07-28T08:00:00-05:00,,,81102,639,12.1,001,1H,,,0,,,
24-033-0030,F-MAG-M633-01,U-MAG-M633-00078,2026-07-28T08:00:00-05:00,,,84314,894,0.9,001,1H,,,0,,,

```

EPA AirHub Ambient Measurement Data - JSON

```

[
{
  "siteID": "24-510-5253",
  "equipmentFeedID": "F-MT1-1020-01",
  "uniqueEquipmentID": "U-MT1-1020-00359",
  "dateTime": "2026-07-28T08:00:00-05:00",
  "parameterCode": "88101",
  "methodCode": "170",
  "value": NULL,
  "unitCode": "105",
  "durationCode": "1H",
  "validityCode": "9",
  "qualifierCodes": "NID"
},
{
  "siteID": "24-003-1004",
  "equipmentFeedID": "F-TEL-0400-01",
  "uniqueEquipmentID": "U-TEL-0400-00208",
  "dateTime": "2026-07-28T08:00:00-05:00",
  "parameterCode": "44201",
  "methodCode": "087",
  "value": "28",
  "unitCode": "008",
  "durationCode": "1H",
  "validityCode": "0"
},
{
  "siteID": "24-047-6432",
  "equipmentFeedID": "F-TEL-T64X-01",
  "uniqueEquipmentID": "U-TEL-T64X-00137",
  "dateTime": "2026-07-28T08:00:00-05:00",
  "parameterCode": "81102",
  "methodCode": "639",
  "value": "12.1",
  "unitCode": "001",
  "durationCode": "1H",
  "validityCode": "0"
},
{
  "siteID": "06-071-0026",

```

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```

"equipmentFeedID": "F-MAG-M633-01",
"uniqueEquipmentID": "U-MAG-M633-00078",
"dateTime": "2026-07-28T08:00:00-05:00",
"parameterCode": 84314,
"methodCode": "894",
"value": "0.9",
"unitCode": 001,
"durationCode": "1H",
"validityCode": "0"
}

```

QA Data Format

QA Data File and Format Conventions

File names for QA Assessment Data do not have required specifications, although it is encouraged to use unique file names for each submission for ease of managing and tracking file submission history. The most common way to accomplish this is by adding a timestamp in the file name. File extensions should match the file format type (.csv for CSV files, or .json for JSON files). Use Table B to determine the QA assessment abbreviation and the appropriate QA assessment format. The three types of QA assessment formats are Equipment, Lab, and NPAP, which are described in Tables C-E. While legacy AQS formats tend to be wide formats, the EPA AirHub QA assessments tend to be tall formats, where one row in an AQS transaction may be 1 or more rows in the equivalent EPA AirHub QA format. See examples later in this document for more context.

Example filename: QAAssessment_1PQC_20260101.csv

QA Assessments List

Table B. Abbreviations and Data Formats associated with each QA Assessment

QA Assessment	QA Assessment Abbreviation	QA Assessment Data Format
1-Point QC	1PQC	Equipment
Annual Performance Evaluation	APE	Equipment

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QA Blank (trip, field)	BL	Equipment
Duplicate	DP	Equipment
Field Proficiency Test	FPT	Equipment
Flow Rate Verification	FV	Equipment
Flow Rate Verification for PMc	FVPM	Equipment
Performance Evaluation Program	PEP	Equipment
Ambient Air Protocol Gas Verification Program	PGVP	Equipment
Replicate	RP	Equipment
Semi-Annual Flow Rate Audit	SAFA	Equipment
Semi-Annual Flow Rate Audit for PMc	SFPM	Equipment
Multi-Channel Sampler Flow Rate Verification	MFRV	Equipment
Multi-Channel Sampler Semi-Annual Flow Rate Audit	MSFA	Equipment
Zero Span	ZS	Equipment
Lead Analysis Audit	LAA	Lab
Lab Proficiency Test	LPT	Lab
Lot or Lab Blank	LB	Lab
National Performance Audit Program	NPAP	NPAP - Specific

Equipment QA Data File

Table C. Fields in the Equipment QA data file.

Field Name JSON Identifier	Required	Format	Description	Additional Details
Assessment Type	Yes	String (4)	Indicates the specific QA assessment associated	Must be a valid QA Assessment Type in the

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Field Name JSON Identifier	Required	Format	Description	Additional Details
assessmentType			with the transaction (abbreviation).	equipment-based assessment list in the EPA AirHub. Allowed assessment types. See "QA Assessment LookAirHub Table." Each QA Assessment has an associated letter/number abbreviation (e.g., 1-Point QC = 1PQC).
Performing Organization ID performingOrganizationID	Yes	String (5)	Unique organization ID associated with the organization performing assessment.	Must already exist in the list of organizations in the EPA AirHub. Organization IDs new to EPA AirHub and are set in the system upon creation of the organization.
Site ID siteID	Yes*	String	Unique Site ID configured for a state + county, Tribal, international, or mobile site. Dashes between individual parts of the site ID can be included or excluded, depending on preference.	A Site ID must already exist in the list of Site IDs in the EPA AirHub before any data is sent related to that site. Site IDs are generated by the system using organization/location details. *If QA Assessment = PGVP, Site ID will be blank.
Equipment Feed ID equipmentFeedID	Yes	String of letters, numbers, and dashes	F+3 Character Make Code+4 Character Model Code+ 2-digit Feed Number. Dashes between individual parts of the feed ID can be included or excluded, depending on preference.	The Equipment Feed ID is a generalized data feed at a site where any instrument of a particular make/model may report to the feed. The Equipment Feed ID is unique to a site and must be created in EPA AirHub prior to submitting data to the Feed.
Unique Equipment ID uniqueEquipmentID	No	String of letters, numbers, and dashes	U+3 Character Make Code+4 Character Model Code+ 5-digit Equipment ID. Dashes between individual parts of the equipment ID can be included or excluded, depending on preference.	The Unique Equipment being QA'd. An Equipment ID must already exist in EPA AirHub before data is sent related to that piece of equipment. Unique Equipment IDs are generated in EPA AirHub by registering the piece of equipment and including relevant info like Make and Model.
Subtype subtype	Required for certain QA Assessment Types.	String	Additional information related to the subtype of assessment.	Applicable Assessment Types and options - BL: "Field" or "Trip",

EPA AirHub Ambient Data Format Standard Documentation

Field Name JSON Identifier	Required	Format	Description	Additional Details
	Otherwise, N/A			- PEP: "Collocated" or "Independent". - SAFA, FA, MFRV, MSFA : "Total Flow" or "Sample Flow" - 1PQC, APE, ZS: "TTP" (Through the Probe), "BOA" (Back of Analyzer), or "AMAP" (As much as Practicable)
Date date	Yes	YYYY-MM-DD String (10)	A data record's date following the ISO 8601 standard.	
Time time	No*	hh:mm:ssTZD String (16)	A data record's time following the ISO 8601 standard.	The two-digit hour (hh) should be in 24-hr time only. The Time Zone Designator (TZD) is either in Coordinated Universal Time (UTC) or the offset from UTC (+hh:mm/-hh:mm) in Local Standard Time (LST). The time corresponds to the beginning of a sampling or averaging period. Daylight savings should not be considered for the LST format option. UTC time format example: 05:00:00 LST time example (Eastern): 00:00:00-05:00 *Required for Assessment Type = QA Blank (BL).
Assessment Number assessmentNumber	No	Integer (3)	Number that helps indicate assessment grouping, if the same assessment type is performed for a unique performing org, site id, equipment id, and parameter code groAirHub on the same day. This is an optional field.	If an Assessment Number is provided, the system will use this number to distinguish between similar assessments performed on the same day (e.g., if an assessment is reconducted to correct for an analyzer issue)
Parameter Code parameterCode	Yes	String (5)	Code that indicates the parameter that is being measured/assessed.	The parameter code must exist in the U.S. EPA's Code List. For general flow-related verifications (FV, SAFA,

EPA AirHub Ambient Data Format Standard Documentation

Field Name JSON Identifier	Required	Format	Description	Additional Details
				MFRV, MSFA) leave parameter code field blank For FVPM, SFPM, parameter code should either be for PMcoarse (81103) or PM2.5 and PM10 (regulatory or non-regulatory)
Method Code methodCode	Yes	String (3)	Code that indicates the analytical and/or collection method used to perform a measurement.	The method code must exist in the U.S. EPA's Code List. For general flow-related verifications (FV, SAFA, MFRV, MSFA) leave method code field blank For FVPM, SFPM, method code should either be for PMcoarse or PM2.5 and PM10 (regulatory or non-regulatory)
Unit Code unitCode	Yes	String (3)	Code indicating the units of the measurement for the specified parameter.	The 3-digit unit code indicates the units of the measurement for the specified parameter. The unit code must exist in the U.S. EPA's Unit Code List. Allowable unit codes are defined by parameter and can be found in the U.S. EPA's Parameter Protocol Table.
Channel channel	Optional. Applicable to equipment with multiple channels only	Integer (2)	Number assigned to a channel of the equipment where a parameter was collected, if applicable.	If the piece of Equipment/Equipment Feed has multiple associated channels, the channel number can be provided for the purpose of linking measurement data to QA assessment data. If channel number is not provided for multi-channel samplers, measurement data will remain in the Preliminary Data State. Channels for samplers are generally defined by the Mass Flow Controller (MFC). When not applicable, this field should be left blank.

EPA AirHub Ambient Data Format Standard Documentation

Field Name JSON Identifier	Required	Format	Description	Additional Details
				If the instrument has multiple channels, channel number must be provided. Required for MFRV- Multi-Channel Sampler Flow Rate Verification and MSFA- Multi-Channel Sampler Semi-Annual Flow Rate Audit.
Measured Value measuredValue	Yes	Decimal	Value reported by the monitor/sampler. (e.g., concentration, flow rate, mass).	For Assessment Type = AA-PGVP, the measured value will be the cylinder concentration. Negative values are accepted.
Assessment Value assessmentValue	Yes*	Decimal.	Value to compare measured value to. From transfer standard, gas standard, etc.*	*Leave blank if Assessment Type = Replicate, Duplicate or QA Blank. If Assessment Type = Zero Span, make sure to include an assessment value for the zero-check record. For level-based assessments, the EPA AirHub system will infer levels based on provided assessment values (i.e., the user will not need to define these). Values must be ≥ 0 .
Assessment ID assessmentID	No	String (12) of letters/numbers	Unique ID describing the manufacturer, city/location, and ID of the cylinder or other assessment instrumentation used.	Note, this field should be blank for Assessment Type = PGVP assessment, since the cylinder information would go in the Equipment Feed ID. FUTURE - this should reference the Id of a QA Equipment (Cylinder, Gas Dilution System, Ozone Standard, etc.)
Qualifier Codes qualifierCodes	No	String (254)	Code that provides explanation as to why a data value was flagged during quality control or is missing.	The qualifier code must exist in the U.S. EPA's Code List. If multiple qualifier codes are reported, separate them with a space not a comma. Null qualifier code should be included if the data value is Null.
Comments comments	No	String ()	Open comments field	

EPA AirHub Ambient Data Format Standard Documentation

Example Equipment QA Files

This example **CSV file** shows carbon monoxide data from an Annual Performance Evaluation.

```
APE,NCDEQ,37-183-0014,F-THM-0048-01,,,2023-05-22,10:31:00-05:00,,42101,554,007,,182.98,188.71,,,
APE,NCDEQ,37-183-0014,F-THM-0048-01,,,2023-05-22,10:34:00-05:00,,42101,554,007,,1005.54,1001.16,,,
```

This **JSON example** shows carbon monoxide data from an Annual Performance Evaluation.

```
[
{
  "assessmentType": "APE",
  "performingOrganizationID": "NCDEQ",
  "siteID": "37-183-0014",
  "equipmentFeedID": "F-THM-0048-01",
  "uniqueEquipmentID": "",
  "subtype": "",
  "date": "2023-05-22",
  "time": "10:31:00-05:00",
  "assessmentNumber": ,
  "parameterCode": 42101,
  "methodCode": 554,
  "unitCode": 007,
  "channel": "",
  "measuredValue": 182.98,
  "assessmentValue": 188.71,
  "assessmentID": "",
  "qualifierCodes": "",
  "comments": "",
}
{
  "assessmentType": "APE",
  "performingOrganizationID": "NCDEQ",
  "siteID": "37-183-0014",
  "equipmentFeedID": "F-THM-0048-01",
  "uniqueEquipmentID": "",
  "subtype": "",
  "date": "2023-05-22",
  "time": "10:34:00-05:00",
  "assessmentNumber": ,
  "parameterCode": 42101,
  "methodCode": 554,
  "unitCode": 007,
  "channel": "",
  "measuredValue": 1005.54,
  "assessmentValue": 1001.16,
```

EPA AirHub Ambient Data Format Standard Documentation

```
"assessmentID": "",
"qualifierCodes": "",
"comments": "",
}
]
```

Examples of Legacy and EPA AirHub Equipment QA data formats

Real examples of AQS data were used for these comparisons

Duplicate Data

Legacy AQS QA Duplicate Data

```
QA||Duplicate|0971|45|041|8003|14129|1|20230516|1|193|105|0.002|0.001|||
```

EPA AirHub QA Equipment Data - Duplicate

```
DP,SCDES,45-041-8003,BGI-VSCC-01,GRP-VSCC-00123,,2023-05-16,,1,14129,193,105,,0.002,,,
DP,SCDES,45-041-8003,BGI-VSCC-01,GRP-VSCC-00123,,2023-05-16,,1,14129,193,105,,0.001,,,
```

Flow Rate Verification

Legacy AQS QA Flow Rate Verification

```
QA||Flow Rate Verification|0776|37|183|0014|88101|1|20230105|1|145|118|16.69|16.673
```

EPA AirHub QA Equipment Data - Flow Rate Verification

```
FV,NDDEQ,37-183-0014,R&P-2025-01,R&P-2025-00341,Sample Flow,2023-01-05,,1,88101,145,118,,16.69,16.673,,
```

Flow Rate Verification for PMc

Legacy AQS QA Flow Rate Verification for PMc

```
QA||PMc Flow Rate V|0782|38|057|0004|81103|3|20240401|1|636|118|-9999|-9999|636|5|4.93
```

EPA AirHub QA Equipment Data - Flow Rate Verification for PMc

```
FVPM,NDDEQ,380570004,TEL-T64X-01,TEL-T64X-00257,,2024-04-01,,1,81103,636,118,5,4.93,,
```

Raw Blank

Legacy AQS Raw Blank Data

EPA AirHub Ambient Data Format Standard Documentation

```
RB|||37|183|0014|88101|1|7|105|145|TRIP|20230117|0:00|7||2|4|6|||||||
RB|||37|183|0014|88101|1|7|105|145|FIELD|20230131|0:00|6||2|4|6|||||||
```

EPA AirHub QA Equipment Data - QA Blank

```
BL,NCDEQ,37-183-0014,GRP-VSCC-01,GRP-VSCC-00123,Trip,2023-01-17,0:00,1,88101,145,105,,7,,,QOD QLE QQI
BL,NCDEQ,37-183-0014,GRP-VSCC-01,GRP-VSCC-00123,Field,2023-01-31,0:00,1,88101,145,105,,6,,,QOD QLE QQI
```

Replicate

Legacy AQS QA Replicate Data

```
QA|||Replicate|0907|44|007|1010|85129|1|20150101|1|811|105|0.0024|0.0069|||
```

EPA AirHub QA Equipment Data - Replicate

```
RP,RIDEM,44-007-1010,TEL-T64X-01,TEL-T64X-00479,,2015-01-01,,1,85129,811,105,,0.0024,,
RP,RIDEM,44-007-1010,TEL-T64X-01,TEL-T64X-00479,,2015-01-01,,1,85129,811,105,,0.0069,,
```

PEP Data

Legacy AQS QA PEP Data

```
QA|||PEP|0082|01|089|0014|88101||20180123|1||INDEPENDENT|142|105|3.2
```

EPA AirHub QA Equipment Data - PEP

```
PEP,CHDNR,01-089-0014,BGI-VSCC-01,BGI-VSCC-00124,Independent,2018-01-23,,1,88101,145,105,,2.4,3.2
```

Lab QA Data File

Table D. Fields in the Lab QA data file.

Field Name JSON Identifier	Required	Format	Description	Additional Details
Assessment Type assessmentType	Yes	String (4) of letters/numbers	Indicates the specific QA assessment associated with the transaction (abbreviation).	Must be a valid QA Assessment Type from the Lab assessment list in the EPA AirHub. See "QA Assessment LookAirHub Table."

EPA AirHub Ambient Data Format Standard Documentation

Field Name JSON Identifier	Required	Format	Description	Additional Details
Collecting Organization ID collectingOrganizationID	Yes	String (5) of letters/numbers	Unique organization ID associated with the organization that collected the sample for assessment.	Must already exist in the list of organizations in the EPA AirHub. Organization IDs are generated by the system upon creation of the organization in EPA AirHub.
Laboratory Organization ID laboratoryOrganizationID	Yes	String (5) of letters/numbers	Unique organization ID associated with the laboratory organization performing assessment.	Must already exist in the list of organizations in the EPA AirHub. Organization IDs are generated by the system upon creation of the organization in EPA AirHub.
Date date	Yes	YYYY-MM-DD String (10)	A data record's date following the ISO 8601 standard.	
Time time	No	hh:mm:ssTZD String (16)	A data record's time following the ISO 8601 standard.	The two-digit hour (hh) should be in 24-hr time only. The Time Zone Designator (TZD) is either in Coordinated Universal Time (UTC) or the offset from UTC (+hh:mm/-hh:mm) in Local Standard Time (LST). The time corresponds to the beginning of a sampling or averaging period. Daylight savings should not be considered for the LST format option. UTC time format example: 05:00:00 LST time example (Eastern): 00:00:00-05:00
Assessment Number assessmentNumber	No	Integer (3)	Number that helps indicate assessment grouping, if the same assessment type is performed for a unique collecting org, laboratory org, and parameter code groAirHub on the same day. This is an optional field.	If an Assessment Number is provided, the system will use this number to distinguish between similar assessments performed on the same day (e.g., if an assessment is reconducted to correct for an analyzer issue)
Parameter Code	Yes	Integer (5)	Code that indicates the parameter that is being measured/assessed.	The parameter code must exist in the U.S. EPA's Parameter Code List .

EPA AirHub Ambient Data Format Standard Documentation

Field Name JSON Identifier	Required	Format	Description	Additional Details
parameterCode				
Unit Code unitCode	Yes	Integer (3)	Code indicating the units of the measurement for the specified parameter.	The 3-digit unit code indicates the units of the measurement for the specified parameter. The unit code must exist in the U.S. EPA's Unit Code List . Allowable unit codes are defined by parameter and can be found in the U.S. EPA's Parameter Protocol Table .
Measured Value measuredValue	Yes	Decimal	Value reported by the monitor/sampler. (e.g., concentration, flow rate, mass).	
Assessment Value assessmentValue	Required where applicable (See Details)	Decimal	Value to compare measured value to. From transfer standard, gas standard, etc.	Required for lab proficiency test and lead analysis audit Assessment Types. When not applicable, leave blank
Qualifier Codes qualifierCodes	No	String (254)	Code that provides explanation as to why a data value was flagged during quality control or is missing.	The qualifier code must exist in the U.S. EPA's Code List. If multiple qualifier codes are reported, separate them with a space not a comma. Null qualifier code should be included if the data value is Null.

Example Lab QA Files

This example **CSV file** shows Manganese (TSP) data from a Lab Proficiency Test (LPT).

```
LPT,IDEVM,IDEVM,2024-01-25,10:31:00-05:00,1,14132,077,5.7538,5.5045,
LPT,IDEVM,IDEVM,2024-01-25,10:45:00-05:00,2,14132,077,15.77192,15.55333,
```

This **JSON example** shows Manganese (TSP) data from a Lab Proficiency Test (LPT).

```
[
```



EPA AirHub Ambient Data Format Standard Documentation

```
{
  "assessmentType": "LPT",
  "collectingOrganizationID": "IDEVM",
  "laboratoryOrganizationID": "IDEVM",
  "date": "2024-01-25",
  "time": "10:31:00-05:00",
  "assessmentNumber": 1,
  "parameterCode": 14132,
  "unitCode": 077,
  "measuredValue": 5.7538,
  "assessmentValue": 5.5045,
  "qualifierCodes": "",
},
{
  "assessmentType": "LPT",
  "collectingOrganizationID": "IDEVM",
  "laboratoryOrganizationID": "IDEVM",
  "date": "2024-01-25",
  "time": "10:45:00-05:00",
  "assessmentNumber": 2,
  "parameterCode": 14132,
  "unitCode": 077,
  "measuredValue": 15.77192,
  "assessmentValue": 15.55333,
  "qualifierCodes": "",
}
}
```

Examples of Legacy and EPA AirHub Lab QA data formats

Real examples of AQS data were used for these comparisons

Lead Analysis Audit

Legacy AQS Lead Analysis Audit

QA Pb Analysis Audit 0520 0258 14129 20230823 1 077 14.9 14.4 66.6 62.4
--

EPA AirHub QA Lab Data - Lead Analysis Audit

LAA,IDEVM,IDEVM,2023-08-23,,1,14129,007,14.9,14.4,
LAA,IDEVM,IDEVM,2023-08-23,,1,14129,007,66.6,62.4,

NPAP QA Data File

Table E. Fields in the NPAP-Specific QA data file for the National Performance Audit Program (NPAP).

EPA AirHub Ambient Data Format Standard Documentation

Field Name & JSON Identifier	Required	Format	Description	Additional Details
Assessment Type assessmentType	Yes	String (4) of letters/numbers	Indicates the specific QA assessment associated with the transaction (abbreviation).	Must be a valid QA Assessment Type in the equipment-based assessment list in the EPA AirHub. Allowed assessment types. "NPAP" is the only accepted Assessment Type for this format.
Performing Organization ID performingOrganizationID	Yes	String (5) of letters/numbers	Unique organization ID associated with the organization performing assessment.	Must already exist in the list of organizations in the EPA AirHub. Organization IDs are set in the system upon creation of the organization in EPA AirHub.
Site ID siteID	Yes	String (9) of letters/numbers	Unique Site ID configured for a state + county, Tribal, international, or mobile site.	A Site ID must already exist in the list of Site IDs in the EPA AirHub before any data is sent related to that site. Site IDs are generated by the system using organization/location details.
Equipment Feed ID equipmentFeedID	Yes	String of letters, numbers, and dashes	F+3 Character Make Code+4 Character Model Code+ 2-digit Feed ID. Dashes between individual parts of the feed ID can be included or excluded, depending on preference.	The Equipment Feed ID is a generalized data feed at a site where any instrument of a particular make/model may report to the feed. The Equipment Feed ID is unique to a site and must be created in EPA AirHub prior to submitting data to the Feed. The Make Code and Model Code are derived from the Make and Model reference table in EPA AirHub. This reference table is maintained by the EPA to ensure consistency across all networks.
Unique Equipment ID uniqueEquipmentID	No	String of letters, numbers, and dashes	U+3 Character Make Code+4 Character Model Code+ 5-digit Equipment ID. Dashes between individual parts of the equipment ID can be included or excluded, depending on preference.	An Equipment ID must already exist in EPA AirHub before data is sent related to that piece of equipment. Unique Equipment IDs are generated in EPA AirHub by registering the piece of equipment and including relevant info like Make and Model.

EPA AirHub Ambient Data Format Standard Documentation

Field Name & JSON Identifier	Required	Format	Description	Additional Details
NPAP Type npapType	Yes	String (3)	Additional information related to the type of NPAP assessment.	Options: "TTP" (Through the Probe), "BOA" (Back of Analyzer), or "AMAP" (As much as practicable)
Date date	Yes	YYYY-MM-DD String (10)	A data record's date, following the ISO 8601 standard.	Date must be greater than or equal to site creation date of associated Site ID and before or equal to site end date (if exists).
Assessment Number assessmentNumber	No	Integer (3)	Number that helps indicate assessment grouping, if the same assessment type is performed for a unique performing org, site id, equipment id, and parameter code groAirHub on the same day. This is an optional field.	If an Assessment Number is provided, the system will use this number to distinguish between similar assessments performed on the same day (e.g., if an assessment is reconducted to correct for an analyzer issue)
Parameter Code parameterCode	Yes	Integer (5)	Code that indicates the parameter that is being measured/assessed.	The parameter code must exist in the U.S. EPA's Parameter Code List .
Equipment Method Code equipmentMethodCode	Yes	String (3)	Code that indicates the analytical and/or collection method used to perform a measurement.	The method code must exist in the U.S. EPA's Method Code List .
Assessment Method Code assessmentMethodCode	Yes	String (3)	Code that indicates the analytical and/or collection method used to perform a measurement.	The method code must exist in the U.S. EPA's Method Code List .
Unit Code unitCode	Yes	Integer (3)	Code indicating the units of the measurement for the specified parameter.	The 3-digit unit code indicates the units of the measurement for the specified parameter. The unit code must exist in the U.S. EPA's Unit Code List . Allowable unit codes are defined by parameter and can be found in the U.S. EPA's Parameter Protocol Table .

EPA AirHub Ambient Data Format Standard Documentation

Field Name & JSON Identifier	Required	Format	Description	Additional Details
Level 1 Measured Value level1MeasuredValue	Yes	Decimal	Value reported by the equipment (monitor/sampler).	
Level 1 Assessment Value level1AssessmentValue	Yes	Decimal	Value to compare measured value to.	
Level 2 Measured Value level2MeasuredValue	Yes	Decimal	Value reported by the equipment (monitor/sampler).	
Level 2 Assessment Value level2AssessmentValue	Yes	Decimal	Value to compare measured value to.	
<i>Measured and Assessment Levels continue to Level 10 with the same requirements, format, descriptions, and rules.</i>				

Example NPAP assessment Files

This example **CSV file** shows carbon monoxide data from an NPAP assessment.

```
NPAP,EPAR4,01-073-0023,F-THM-0048-01,,TTP,2023-10-26,1,42101,093,554,007,,,0.175,0.1693,0.779,0.7717,2.663,2.6688,3.668,3.6678,,,,,,,,,
```

This **JSON example** shows carbon monoxide data from an NPAP assessment.

```
[
  {
    "assessmentType": "NPAP",
    "performingOrgID": "EPAR4",
    "siteID": "01-073-0023",
    "equipmentFeedID": "F-THM-0048-01",
    "uniqueEquipmentID": "",
    "npapType": "TTP",
    "date": "2023-10-26",
    "assessmentNumber": 1,
```

EPA AirHub Ambient Data Format Standard Documentation

```
"parameterCode": 42101,  
"equipmentMethodCode": 093,  
"assessmentMethodCode": 554,  
"unitCode": 007,  
"level1MeasuredValue": "",  
"level1AssessmentValue": "",  
"level2MeasuredValue": 0.175,  
"level2AssessmentValue": 0.1693,  
"level3MeasuredValue": 0.779,  
"level3AssessmentValue": 0.7717,  
"level4MeasuredValue": 2.663,  
"level4AssessmentValue": 2.6688,  
"level5MeasuredValue": 3.668,  
"level5AssessmentValue": 3.6678,  
"level6MeasuredValue": "",  
"level6AssessmentValue": "",  
"level7MeasuredValue": "",  
"level7AssessmentValue": "",  
"level8MeasuredValue": "",  
"level8AssessmentValue": "",  
"level9MeasuredValue": "",  
"level9AssessmentValue": "",  
"level10MeasuredValue": "",  
"level10AssessmentValue": ""  
}  
}
```

Network Metadata (future)

Metadata is stored in the Ambient system. Network metadata is organized around four related entities: Sites, the physical locations where monitoring takes place; Equipment Feeds, make-and model-specific data “lanes” used to report ambient measurements at a site; Parameters, the individual pollutants or metrics measured on a given equipment feed; and Unique Equipment, the specific physical instruments deployed at a site.

Metadata in the EPA AirHub can be updated through the User Interface and with the EPA AirHub API in the future. More details on metadata fields will be added to this document in a future version.

EPA AirHub Ambient Data Format Standard Documentation

Legacy Crosswalk Reference Tables

In some cases, EPA AirHub field names or formats are new or different compared to legacy AQS and EPA AirNow formats. The following crosswalk reference tables help users of the legacy systems see how those fields translate to EPA AirHub. Three crosswalk tables are provided here: 1) ambient measurement data, 2) equipment-based QA data, and 3) lab-based QA data. Additionally, several examples are provided that show legacy QA data in the new EPA AirHub QA formats.

Table F. Legacy crosswalk for Ambient Measurement Data showing differences between the new EPA AirHub data format standard and older standards in AirNow and AQS.

Changes	EPA AirHub		AirNow		AQS	
	Field	Format	Field	Format	Field	Format
New format	Site ID	String (9)	site	String (12)	Combination of three AQS fields: 'State Code/Tribal Indicator', 'County Code/Tribal Code', and 'Site Number'	State Code/Tribal Indicator – String (2), County Code/Tribal - Code String (3), and Site Number – String (4)
New field	Equipment Feed ID	String (9) starting with F	--	--	--	--
New field	Unique Equipment ID	String (12) starting with U	--	--	--	--
New format	Datetime	YYYY-MM-DDThh:mm:ssTZD String (27)	datetime	String (20)	'Sample Date' 'Sample Begin Time'	Derived from two AQS fields: 'Sample Date' YYYYMMDD. and 'Sample Begin Time' HH:MM
No change	Latitude	Decimal (9,6) - a real number with 9 total digits, 2-3 on the left (including the negative sign) and 6 to the right.	lat	Decimal (10,6)	Latitude (Note: Latitude is on the Site Basic transaction format, not the Raw Data transaction.)	Decimal (10,6)
No change	Longitude	Decimal (10,6) - a real number with 10 total digits, 3-4 on the left (including the negative sign) and 6 to the right.	lon	Decimal (10,6)	Longitude (Note: Longitude is on the Site Basic transaction format, not the Raw Data transaction.)	Decimal (10,6)
No change	Parameter Code	Integer (5)	parameter	Integer (5)	Parameter Code	Integer (5)

No change	Method Code	Integer (3)	method_code	String (3)	Method Code	String (3)
No change	Value	Decimal (12,5) - a real number with a maximum 10 digits total with no more than 5 digits to the right of the decimal point.	value	Decimal (10,5)	Reported Sample Value	Decimal (10,5)
New field name; code updated	Unit Code	Integer (3)	unit	Integer (3)	Reported Unit Code	Integer (3)
New field name; code updated	Duration Code	String (3) of letters/numbers	duration	Integer	Sample Duration Code	String (1)
New field name; code updated	Collection Frequency Code	String (3) of letters/numbers	frequency	Integer	Collection Frequency Code	String (2)
Same as AQS Sampler Channel Number field	Channel	Integer (3)	--	--	Channel Number (Note: Channel Number is on Sampler Channel transaction format, not Raw Data transaction.)	Integer
Updated code definitions	QC Code	String (1)	qc	Integer	--	--
New field name; updated codes	Qualifier Codes	String (254)	qualifiers	String (255)	Qualifier Code	Derived from multiple AQS fields: 'Qualifier Code - 1' to 'Qualifier Code - 10' each formatted String (2)
New field	Private Flag	1 (private), 0 or blank (public)	--	--	--	--

EPA AirHub Ambient Data Format Standard Documentation

Legacy Crosswalk for Equipment-based QA Data

Table G. Legacy crosswalk for equipment-based QA data showing differences between the new EPA AirHub data format standard and older standards in AQS.

Changes	EPA AirHub		AQS	
	Field	Format	Field	Format
New format	Assessment Type	String (2-4) of letters/numbers	Assessment Type	String; Varies across QA transactions
New field name and format	Performing Organization ID	String (5) of letters/numbers	Performing Agency Code	String; Must exist in AGENCIES reference table.
New format	Site ID	String (9) of letters/numbers	Combination of three AQS fields: 'State Code/Tribal Indicator', 'County Code/Tribal Code', and 'Site Number'	String; Derived from three AQS fields: 'State Code/Tribal Indicator' String (2), 'County Code/Tribal Code' String (3), and 'Site Number' String (4)
New field	Equipment Feed ID	String (9) of letters and numbers starting with F	--	--
New field	Unique Equipment ID	String (12) of letters/numbers starting with U	--	--
New field	Subtype	String (5)	PEP Type	String; Must = INDEPENDENT or COLLOCATED
New format	Date	YYYY-MM-DD String (10)	Assessment Date	YYYYMMDD
New field (not required)	Time	hh:mm:ssTZD String (16)	--	--
No change	Assessment Number	Integer (3)	Assessment Number	Integer
No change	Parameter Code	Integer (5)	Parameter Code	Integer (5)
No change	Method Code	Integer (3)	Monitor Method Code	String (3)
New field name; codes updated	Unit Code	Integer (3)	Reported Unit Code	Integer (3)

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Changes	EPA AirHub		AQS	
	Field	Format	Field	Format
No change	Channel	Integer (2)	Channel Number (Note: Channel Number is not on all AQS QA transaction formats.)	Integer
New field name	Measured Value	Decimal (12,5) - a real number with a maximum 10 digits total with no more than 5 digits to the right of the decimal point.	Monitor Concentration and similar fields (e.g., Level 1 Monitor Concentration, Monitor Zero Value, Duplicate Value 1)	Decimal
New field name	Assessment Value	Decimal (12,5) - a real number with a maximum 10 digits total with no more than 5 digits to the right of the decimal point.	Assessment Concentration and similar fields (e.g., Level 1 Assessment Concentration, Assessment Span Value)	Decimal
New field	Assessment ID	String (12) of letters/numbers	--	--
New field; codes updated	Qualifier Codes	String (254)	--	--

Legacy Crosswalk for Lab-based QA Data

Table H. Legacy crosswalk for lab-based QA data showing differences between the new EPA AirHub data format standard and older standards and AQS.

Changes	EPA AirHub		AQS	
	Field	Format	Field	Format
New format	Assessment Type	String (2-4) of letters/numbers	Assessment Type	String; Varies across QA transactions
New field name	Collecting Organization ID	String (5) of letters/numbers	--	--
New field name	Laboratory Organization ID	String (5) of letters/numbers	Performing Agency Code	String; Must exist in AGENCIES reference table.
New field	Subtype	String (5)	Blank Type (only in AQS RB-Raw Blank transaction)	In RB-Raw Blank transaction, must =

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Changes	EPA AirHub		AQS	
	Field	Format	Field	Format
				FIELD, TRIP, LAB, or LOT
New format	Date	YYYY-MM-DD String (10)	Assessment Date	YYYYMMDD.
New field (not required)	Time	hh:mm:ssTZD String (16)	--	--
No Change	Assessment Number	Integer (3)	Assessment Number	Integer
No Change	Parameter Code	Integer (5)	Parameter Code	Integer (5)
New field name; codes updated	Unit Code	Integer (3)	Reported Unit Code	Integer (3)
New field name	Measured Value	Decimal (12,5) - a real number with a maximum 10 digits total with no more than 5 digits to the right of the decimal point.	Laboratory Response Value and similar fields (e.g., Blank Value)	Decimal
New field name	Assessment Value	Decimal (12,5) - a real number with a maximum 10 digits total with no more than 5 digits to the right of the decimal point.	Assessment Mass and similar fields	Decimal
New field; codes updated	Qualifier Codes	String (254)	--	--

Any Equipment Feed and Unique Equipment IDs are not real and provided for illustrative purposes

EPA AirHub Reference Table and Codes

Resource	Link
EPA AirHub API Documentation	TBD
Organization IDs	TBD
Make and Model Reference Table	See below

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Method Codes	No changes, Link
Parameter Codes	No changes, Link
Unit Codes	See below
Duration Codes	See below
Collection Frequency Codes	See below
Preliminary QC Codes	See below
Qualifier Codes	See below

NOTE: All the code tables are currently located in the spreadsheet that accompanied this document's distribution.

Version History Change Log

Version 0.1

General

- Updated system name from Unified Platform to EPA AirHub throughout the document
- Fixed miscellaneous spelling, grammar, and word choice errors throughout the document.

Intro

- Added a section outlining major changes for EPA AirHub to provide additional context for new terms/ideas throughout the documentation

EPA AirHub Ambient Data Format Standard Documentation

Ambient Measurement Data Format

- *SiteID*: Updated confusing language in the field details.
- *Datetime*: Fixed typo in format definition, defined Time Zone Designation (TZD), added examples for UTC and LST formats.
- *Value*: Updated format to match AQS standards. Updated Description to be more clear on NULL values and negative concentrations.
- *Method Code*: Updated format to String (3).
- *Channel*: Updated format to Integer (2). Updated requirements and additional details to clarify definition of channel.
- *QC Code*: Updated name to “Preliminary Validity Code” to avoid confusion with Qualifier Codes and to highlight that these codes are applicable to Preliminary data only. Removed “Insufficient Data” as an option, as that only applies to aggregated datasets. Removed “Estimated” as an option. Added clarification as to the validity of each code. Added clarification for blank/NULL validity codes.
- *Qualifier Codes*: Updated additional details to clarify that multiple NULL qualifiers can now be utilized if reporting a NULL value. Updated JSON variable name to be plural to indicate multiple are allowed (qualifierCodes instead of qualifierCode).
- *Private Flag*: Clarified that this applies to preliminary data only

Example Ambient Measurement Files

- Fixed Make abbreviation for R&P
- Updated Qualifier Codes in examples to match new code formats
- Added two examples, one for AQS->EPA AirHub, and one for AirNow->EPA AirHub, showing differences in reporting formats.

QA Data Format - Intro

- Updated Table B title to be more clear.
- Changed name and order of columns in Table B to be more readable.
- Fixed abbreviation for Field Proficiency Test in Table B
- Updated Names/Abbreviations for several Flow Rate assessment types (Flow Rate Verification->Flow Rate Audit)
- Renamed Speciation Semi-Annual Flow Rate Audit to “Multi-Channel Sampler Semi-Annual Flow Rate Audit” and updated abbreviation. This was renamed to account for the wider amount of multi-channel samplers beyond speciation that this assessment may apply to.

EPA AirHub Ambient Data Format Standard Documentation

- Renamed Speciation Flow Rate Audit to “Multi-Channel Sampler Flow Rate Audit” and updated abbreviation. This was renamed to account for the wider amount of multi-channel samplers beyond speciation that this assessment may apply to.

QA Data Format - Equipment

- Moved format examples from the appendix to directly after Table C.
- *Performing Organization ID*: added clarification that organization ID is a new SLT ID unique to EPA AirHub
- *Time*: Updated description and added examples
- *Unique Equipment ID*: Added clarification that this is the equipment being QA'd. Added “unique” equipment clarification to equipment details
- *Subtype*: Added additional subtype options for certain QA Assessments
- *Parameter Code*: Added guidance for some of the equipment QA formats.
- *Method Code*: Updated format to String (3). Removed sentence clarifying that the method code must be for an FEM or FRM, which is not true. Added guidance for some of the equipment QA formats.
- *Unit Code*: added link to reference table.
- *Channel*: Updated format to Integer (2). Updated requirements and additional details to clarify definition of channel.
- *Measured Value*: Updated format to match AQS standards. Updated Description to be more clear on negative concentrations.
- *Assessment Value*: Updated format to match AQS standards. Updated Description to be more clear on negative concentrations and Zero Span assessments.
- Added *Alternate Method Detection Limit* and *Uncertainty* fields into ambient measurement file format.
- Moved AQS vs. EPA AirHub format examples to directly follow the file format examples, as opposed to having them all at the end of the document.
- Raw Blank AQS vs EPA AirHub example: added qualifiers to AQS example data and translated qualifiers in EPA AirHub data
- Duplicate AQS vs. EPA AirHub example: added missing data row to EPA AirHub example.

QA Data Format - Lab

- *Time*: Updated description and added examples
- *Measured Value*: Updated Format to match AQS expectations.
- *Assessment Value*: Updated Requirements, Format, and Details

EPA AirHub Ambient Data Format Standard Documentation

QA Data Format - Examples

- Added an AQS vs EPA AirHub example for a Lead Analysis Audit

QA Data Format - NPAP

- *Assessment Type*: Updated format to be String (4). Updated Details to remove irrelevant text for NPAP assessments.
- *Site ID*: Updated details to remove irrelevant text for NPAP assessments.
- *Unique Equipment ID*: Updated details for consistency across formats
- *NPAP Type*: Added full text for each abbreviated option and added AMAP (as much as practicable) NPAP type.
- *Equipment Method Code*: Updated Format to String (3), removed sentence clarifying that the method code must be for an FEM or FRM, which is not true.
- *Assessment Method Code*: Updated Format to String (3), removed sentence clarifying that the method code must be for an FEM or FRM, which is not true.
- *All Levels*: Updated Format for values to be Decimal.

QA Data Format - Ozone SRP

- Removed format per EPA guidance - reasoning: little to no use.

Changes in linked Code Spreadsheet

- **Make/Model Reference Table**
 - Added entry for “Hi-Q HVP-4300AFC” and “Tisch TE-5170 VFC+”
 - Note: Parameter/Method combos still needed
 - Added entries for iQ series Thermo instruments (42, 43, 48, 49)
 - Fixed PM2.5 parameter code for MT1-BAMS from 88101 to 88502
 - Deleted duplicate entries for Thermo Partisol 2025 and 2025i
 - Fixed Generations/Model codes for Teledyne Monitor Labs ML9810, ML9810B, ML9811, and ML9812
- **Duration Code Table**
 - Reworked table to show Before/After more clearly
- **Collection Frequency Codes**
 - Reworked table to show Before/After more clearly
 - Added 2D for Every Other Day - should not be deprecated per EPA feedback

EPA AirHub Ambient Data Format Standard Documentation

- **Qualifiers - Inform**
 - Reworked table to show Before/After more clearly
- **Qualifiers - Request Exclusion**
 - Reworked table to show Before/After more clearly
- **Qualifiers - QA**
 - Reworked table to show Before/After more clearly
- **Qualifiers - NULL**
 - Reworked table to show Before/After more clearly
 - Separated several NULL codes into two separate codes